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SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION
FOR THE ADVANCEMENT OF SCIENCE.

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FRIDAY, JUNE 5, 1903.

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. SECTION I, SOCIAL AND ECONOMIC SCIENCE. I.

At a business meeting held on Monday morning, December 29, the organization of Section I for the Washington meeting was perfected with the following officers:

Vice-President—H. T. Newcomb, Philadelphia.

Secretary—Frank H. Hitchcock, Washington.

Member of Council—Marcus Benjamin.

Sectional Committee—Carroll D. Wright, Vice-President, 1902; Frank R. Rutter, Secretary, 1902; H. T. Newcomb, Vice-President, 1903; Frank H. Hitchcock, Secretary, 1903; Frank R. Rutter, for five years; B. E. Fernow, for four years; Carroll D. Wright, for three years; E. L. Corthell, for two years; Henry Farquhar, for one year.

Member of General Committee—Le Grand Powers.

On Monday afternoon Hon. Carroll D. Wright, the retiring vice-president of the section, delivered an address on 'The Psychology of the Labor Question.'

Morning and afternoon meetings of the section for the presentation of papers were held on Tuesday, Wednesday and Friday.

The program consisted of thirty-five papers. Abstracts of these papers are presented below.

The Economic Law of Competition and of Monopoly: ALLEN R. FOOTE, editor of *Public Policy*.

Mr. Foote in his paper pointed out that

all industries might be divided into two classes, viz., competitive and monopolistic. Under the head of competitive industries he included the production of all commodities which could be transported to be sold in markets other than that of their origin. Under monopolistic industries he classed public service corporations. He then proceeded to show that in competitive industries, if the price of the article sold was raised too high or so as to obtain an undue profit, fresh competition would be induced. On the other hand, the cost of a unit of production decreased as facilities for producing an increased number of units within a given time were developed or acquired. By example he showed that the economic selling-price for production in lots of 1,000 was less than the cost of producing in lots of 100. Consequently the producers of lots of 1,000 would kill off all producers in lots of 100. Similarly the economic selling-price for lots of 10,000 was less in cost of production for lots of 1,000. Finally, the economic selling-price for 1,000,000-lot production would be less than the cost in the 100,000-lot production. So that, ultimately, the largest producers of unit lot productions would kill off all smaller producers. Mr. Foote said that the large combinations which were able to turn out unit lot productions on an immense scale were public benefactors. They could not become odious monopolies because they were always bound to safeguard themselves against attack from competition and also against the possibility of making active the latent force of potential competition. Every reduction in selling-price broadened markets by bringing the product within the buying power of an ever-increasing number of consumers. This was the process which tended to make the luxuries of the rich the necessities of the poor. In order, however, for economic production to be carried on

profitably along competitive lines, secrecy in management was absolutely essential. And this was true whether the producer was a single person or a large combination of corporations. The present anti-trust law and all other laws which made a distinction between different classes of manufacturers in competitive industries were illogical and indefensible as an interference with freedom of contract, were clearly in conflict with the natural law of economical development and were not really for the interest either of workmen or of consumers. Public service corporations, which were naturally monopolistic, Mr. Foote pointed out were on an entirely different footing; these should be strictly regulated by laws determining the cost price of services rendered and allowing, in addition thereto, a fair economic profit. This was all that could be done by public ownership, and, in Mr. Foote's opinion, when the public clearly realized this they would no longer place unnecessary burdens upon public service corporations, because each of these burdens had to be paid for by the consumer.

As a logical conclusion Mr. Foote suggests that the Sherman anti-trust law be revised to make it properly applicable to industrial corporations only, excluding from its operation inter-state transportation corporations, that the inter-state commerce law be revised properly to deal with inter-state transportation corporations only, and that the states take similar action applicable to business and public service corporations.

Remarks on Capitalization and Publicity:

HON. MARTIN A. KNAPP, chairman of the Inter-State Commerce Commission.

Mr. Knapp discussed the proposition that all corporations under congressional control be required to make full disclosures

of their genesis and operations, so that it may be seen how the amount of money originally paid in, or the value of the assets at any time owned, compares with the par value of all bonds and stocks issued. He expressed doubts as to the soundness of the argument that publicity would prevent stock-watering, believing it unproved that the excessive issue of corporate securities was a source of such danger as to excite public alarm. He said he was yet to be convinced that enforced publicity would not be a harmful exercise of public authority.

His remarks were in part as follows: I maintain that the stockholder, as such, is not benefited by corporate publicity, and would be harmed rather than helped by its enforcement. It is one thing for the stockholder to have knowledge of the concern whose shares he holds; it is quite another thing to furnish the public the same information. I fail to see that publicity can be desirable to the stockholder. The justification for this proposal, therefore, must be found, if at all, in the theory that the state is charged with the duty of safeguarding the investment of capital in corporate securities. To my mind this is a most serious proposition, and I think we should long hesitate before embarking upon such a paternal venture. Leaving out the speculator and taking into account only those seeking honest investment, ten times more money, to say the least, has been sunk in farm mortgages, suburban lots, patent rights, buying and selling grain, cotton and other commodities, where no corporate shares were dealt in or even existed, than was ever lost on account of the fictitious or excessive issue of corporate securities. I can not but regard corporate publicity of the kind and to the extent advocated by many as a certain and serious hindrance to effective competition. Just

as the Sherman anti-trust law, which is based upon an economic fallacy, has indirectly aided the very results it was designed to prevent, so the compulsory disclosure of all corporate transactions would undermine the competition it was intended to support. Bearing in mind how rapidly all kinds of business are assuming the corporate form, that the competition of individuals is fast disappearing, and that competition in the future will be mainly between corporations, it seems plain to me that the enforcement of corporate publicity would be an added incentive to industrial combination. Therefore, as I view the matter, the remedy in question will be worthless to the great mass of people, the consumers, for their troubles are not caused by watered stock and will not be alleviated by publicity. It will not benefit the actual stockholder, for however much he may need information for himself, his interests would not be promoted by bringing that information to public knowledge. Against its doubtful and very limited usefulness to the intending purchaser of corporate shares is the danger, not to be lightly estimated, of giving sanction to a principle of extreme paternalism and furnishing a fresh impulse, not to compete, but to consolidate.

The Necessity of Organization among Employers: DAVID M. PARRY, president of the National Association of Manufacturers.

The great need of the world to-day is organization—organization in every line of human effort. The workers of the land began to organize seventy-five years ago, and although their organizations have been by no means perfect, either as to management or numerical strength, yet they have been able, in consequence of them, to wield much power both with their employers and with

law-making bodies. But capital is as essential a factor in production as labor, and it is as necessary for the welfare of the country and the human race that its rights be recognized and protected as those of labor. In order to protect these rights organization is necessary. In union there is strength.

Heretofore in this country there has been no such thing as organized capital. It is true that there is consolidated capital—accumulations of capital brought together for the purpose of enlarging productive power—but consolidated capital is not organized capital. A definition of the latter term, I take it, should be an organization of men, engaged in different lines of industry, who are brought together for the purpose of protecting the general interests of capital, that the industrial prosperity of the country may be maintained and increased. Unorganized labor can not make known its wants, nor can unorganized capital do so.

The growing organization of labor in recent years makes it all the more imperative that capital organize. Although organized labor represents only fourteen per cent. of the sixteen millions of workers in this country, yet by its persistent agitation in the press and the political field it has in manifold ways affected the business and political life of the nation. It is to be admitted that it has accomplished much good. If it had done no more than to secure the standardizing of the coupler on freight cars by which loss of life has been minimized among railway employees, the right of labor to organize would be vindicated. There can be no question that there is a large field of usefulness for such organizations.

But while labor organizations can accomplish much good, they can also, if

misguided, accomplish much evil—evil for the workingmen themselves as well as for progress and civilization. To-day these organizations are thoroughly permeated with socialistic principles, which they are attempting to put into practice, and which program, if successful, can not but result in industrial destruction. The four principles of trades-unionism to-day are: (1) Men shall have the right to say how long they shall work; (2) how much they shall turn out; (3) how much they shall get; (4) who shall be employed. If ever the employer declines to admit these propositions there is the strike and the boycott, and consequent industrial loss. If successful in enforcing their principles, there is also industrial loss, for these principles mean the bringing about of uniformity of effort among men, and a diminishing of their productive power, both of which must prove fatal to the best interests of humanity. Uniform effort means the squeezing of men into one puny mould, and the enthronement of sullen and impudent incompetency and stupidity. Decreased productive power means less consumable wealth to be distributed. Organized labor appears also enamored of the idea that all wealth produced must be distributed, thus preventing those accumulations of capital which tell so much for the increased productive power of a nation.

To combat the errors of organized labor is a duty which compels the organization of capital. Organized capital could also accomplish much in devising ways and means for the advancement of the commercial supremacy of the republic. When capital and labor are both organized they can sit down together and settle their disputes in an orderly and scientific way, and there would be an end to strikes and boycotts, hurtful to both.

The Right of the Laborer to His Job:

WALTER S. LOGAN, New York city.

The question is considered under two heads: (1) The moral right, and (2) the legal right.

Under the first head Mr. Logan shows that the human species is of such a complicated structure, and the requirements of its existence and development so multi-form, that labor is a necessity. Besides, we alone, of all the species that inhabit the earth, have organs which make productive and sustained labor on any considerable scale possible.

Labor, therefore, must have been not alone the necessity of our existence, but the intention of our creation.

Mr. Logan then argues that if labor is the necessary condition of our existence, and by labor alone can the apparent end of our creation be fulfilled, the right to labor—that is, the right to have a chance to labor—must be considered one of the primary rights of humanity.

Mr. Logan, summing up this branch of the subject, says:

“Theology and science both agree as to the substantial import of the decree which emanated from the garden of our nativity, whenever that garden and wherever that nativity was. By the sweat of man’s brow he is to earn his daily bread. Call it a doom or a birthright, whichever you choose. The right is the necessary consequence of the necessity. If man *must* earn his daily bread he has a right to do so.”

Under the second head, ‘The Legal Right,’ Mr. Logan argues that a legal right is only the formulation of a natural right. The statutes which punish killing do not *make* murder a crime; they simply recognize it as such. Mr. Logan says:

“If a man has a moral right to work there is some legal recognition of that

right, or such legal recognition must be formulated whenever it is required.

“If the right was omitted from the enumerations in the Magna Charta or the Declaration of Independence, it was because those were times in which work, though comparatively unproductive, was plentiful. There was always enough to be done.”

Mr. Logan’s paper concludes with a description of the legislation which he conceives to be necessary to place the right of the workman to his job upon a solid legal basis. He concludes as follows:

“I think the time has come when we must rewrite the Declaration of Independence so that it will read, ‘All men are entitled to certain inalienable rights, and among those rights are life, liberty and a job.’

“Perhaps that is the way the distinguished author of the Declaration intended it to be read. The phrase ‘the pursuit of happiness’ may have been only his synonym for ‘a job.’”

Recent Aspects of the Immigration Problem: Professor ROLAND P. FALKNER, chief of the Division of Documents, Library of Congress.

The fact that in the last fiscal year immigration rose to a height almost unparalleled in our experience draws attention anew to the immigration question. In the closing decade of the century it had fallen off considerably and some felt that its end was drawing near. But it has taken a fresh start, and it behooves us to examine what is its contribution to our population and what are the questions which it raises. It is a mistaken idea to suppose that the foreign-born element grows apace with immigration. There are deaths in the ranks of the older settlers to be made up by the new before there can be a net gain. Though

half a million Germans came to the United States between 1890 and 1900, there were fewer Germans in the country at the latter date. But this does not account for the entire discrepancy in growth. In 1900 there were only ten per cent. of the immigrants arriving in the previous decade enumerated by the census. Some had died, some had returned to their native lands. This brings out the fact that the volume of immigration is an inaccurate criterion of the addition to the population, and is growing more so.

The ease of movement to the country is supplemented by the ease of getting away, and many of those who come to our shores are not true settlers among us, but passing visitors. This introduces a factor of the greatest moment. It has always been assumed by those who look upon immigration in an optimistic spirit that, however awkward he might be in his accomplishment, nothing was more characteristic of the new arrival than his desire to become an American, and many were content to take the will for the deed. But we are now confronted with immigrants who have no such desire; whose only wish is to make the most of their economic opportunities and enjoy the fruits of their toil elsewhere. It is highly desirable that statistical information be collected as to outgoing steerage passengers, that we may not be left to conjecture as to the extent of this movement.

We are frequently told that the immigrant would be welcome if he would go west and develop the country, but that he persists in staying in the eastern states and in crowding into the cities. However much public attention has been called to this matter, it is not exactly a new phase of the immigration problem, nor is it an indication of the perversity of the immigrant. The immigrant has not contributed much

to the development of the country. He has followed in the wake of the nation, and at each census since 1850, when the foreign-born were first separately enumerated, they have been relatively more numerous in the eastern states. It can not be wondered that the foreign-born flock to the cities since the native-born do the same thing. Each follows the opportunities for labor. Since city growth is the characteristic of modern time, towns naturally attract population, particularly those elements not rooted by the possession of land to the soil. Groups of foreign-born in cities, moreover, yield sooner than like groups in rural districts to the contact with the English-speaking element, and here is some compensation.

But however unusual the phenomena noted, they should not, therefore, give less concern. The protection of the standard of life, or of American ideals, is the first duty of the statesman. The exclusion of all those who do not give reasonable promise of an ability and will to conform to our institutions is a duty which can not be put aside.

Bosnia: A Problem in Civil Administration: WILLIAM E. CURTIS, Washington, D. C.

William E. Curtis read from advance sheets of 'The Turk and His Lost Provinces' now in press, an interesting description of the regeneration by the Austrians of Bosnia, a former province of Turkey which was placed under their protection by the powers of Europe after the Turko-Russian war in 1878. At that time Bosnia was one of the most unhappy and hopeless places on earth; but since its release from Turkish domination it has become one of the most peaceful and prosperous provinces in Europe. Nowhere else in all the continent has there been so rapid

an increase in population and wealth or so profitable a development of natural resources.

Under the Turks murder was not considered a crime, and it is estimated that from ten to fifteen thousand people were killed annually by the soldiers and by each other. During the last ten years, out of a population of nearly two millions the homicides have averaged only six a year, and in 1900 there were only two. In Turkish times robbery was as common as lying, and farmers hid their cabins where they could not be seen from the highways, for fear of raids from bandits and marauding soldiers. There has been no case of robbery in Bosnia since 1895, and in 1900 but one case of burglary. Other crimes are equally rare.

The population of Bosnia is about 2,000,000, one third Moslems, one third members of the orthodox Greek church, one fifth Roman Catholics, and the remainder Protestants and Jews. The population has doubled in twenty years, and is increasing at the rate of ten per cent. a year. The people are peaceful, contented and prosperous. The cities are filled with new and handsome houses. Factories are being erected to utilize the water power and consume the raw material produced in the country. Training schools and other institutions have been established to qualify the people to make the most intelligent use of their opportunities. Members of the different religions mingle on amicable terms and show mutual respect and toleration. Taxes are low and are honestly collected and disbursed; the courts are wisely and justly administered, and the people have learned for the first time to appreciate a just and liberal government.

Bosnia is the first province of Turkey that was ever well governed. Enlightened Mohammedans who have observed the ad-

vantages are gradually yielding, and while no adult Moslem was ever converted to Christianity, they are adopting the customs of the western world, and their women are being released from the degrading position which they occupy in all the lands of Islam.

Mr. Curtis suggested that there was much in the Austrian experiment in Bosnia that might profitably be imitated by the United States in the Philippines.

The Sources and Margin of Error in Census Work: LE GRAND POWERS, Chief Statistician for Agriculture, U. S. Census.

The most important sources of error in census work are those of omission and duplication by the enumerators. Such errors have occurred in all census work.

In the census of agriculture the omissions are most numerous in sparsely settled sections where there is much irregular land surface. The duplications are most numerous in sections of the opposite character, and especially in communities with a large development of tenant farming.

The census office can and does check against duplications, and these checks have been more fully developed in the twelfth census than ever before. The office can not, during the work of schedule revision and tabulation, check against omissions of farm land by enumerators. Hence the probability of greater omissions than duplications in the completed report.

An analysis of census data, and comparisons of the same, with the records of assessed land, shows greater omissions than duplications in all parts of the country.

The omissions of farm land in Iowa equal about 1 per cent., and the duplications of errors of calculation or revision that have a tendency to unduly exaggerate

area aggregate about .8 per cent., thus leaving the final report less than a complete exhibit.

In Ohio, Indiana and Illinois, and in most of the older states, the margin of omissions exceeds the duplications and errors exaggerating results of not less than 2 or 3 per cent., and in the range states extending from western Kansas to the Pacific the margin of omission is from 20 to 25 per cent., and for the nation not less than 5.

The margin of error in staple crops, such as corn and wheat, is not, however, much, if any, greater than 1 per cent., and for minor crops, dairy products, poultry, etc., much greater, approximating 10 per cent.

The margin of error in the office work of the census due to errors in schedule revision, tabulation, result work, etc., varies from .1 to .5 per cent.

Requisites in Crop Reporting: H. PARKER WILLIS, Washington, D. C.

The subject of crop reporting is of special interest at this time because of some dissatisfaction in the business world concerning the service now available. Within recent years there has been a lack of faith in the work done by the government offices, and this has rendered it of more than usual importance to study the methods of developing such a service along proper lines.

The first requisite in establishing a crop-report service is honesty in the officials in charge. This statement implies not mere personal honesty, but scientific truthfulness, freedom from bias and a display of the scientific spirit. As incidents to the attainment of these qualities the officials in charge of any crop-report service should of course be free from any pecuniary interest in that service, and devoid of bias in favor of any particular class in the community. They should not be permitted to

speculate on the exchanges where those products which are affected by their reports are listed. Furthermore, the force working under them should be free from bias, and should be selected upon civil service principles, promotions being made after a non-partisan method. This applies not merely to the force in the office, but also to the outside force of correspondents, who ought not to represent any particular class, but should be selected in such a way that any bias manifested by any one class will be offset by the bias shown in the returns furnished by another. The returns should be absolutely public and should be furnished to all persons simultaneously. They should be public, not only as regards results, but as regards methods. In collecting the figures there should be an effort constantly to look for actual facts rather than for opinions. In other words, crop returns should, if possible, not be estimates at all, but should be representative of exact facts. Correspondents and all employees should be paid, for in this way more accurate and reliable results are obtained. The government should certainly not publish estimates. If, however, it is to do so there should be such a relationship between the office through which the basis for the estimates is obtained and the office furnishing those estimates, as to insure harmony of result.

Some Views of Recent Sociology: JAMES H. BAKER, president of the University of Colorado.

One conclusion is justified, namely, that social progress can not rely upon natural selection alone, but must bring to its aid all the forces of material and physical betterment, of public opinion, law, morality and religion.

Democratic government is the servant of the people; the will of the people can con-

trol its character and its tendencies; it is the necessary machinery for bringing about many reforms; and a people who have not the virtue and active energy to effect reforms through government are incapable of accomplishing them through any other organization of society or lack of organization.

Individual responsibility in social reform can not be too strongly urged. *Laissez faire* is materialism, fatalism, selfishness, savagery, indifference, laziness, mere subjective religious life and Pharisaism. It is the priest and the Levite, and not the Samaritan.

We may dismiss anarchism and revolutionary socialism at the outset. Even if in a distant age government control can be largely relaxed, abolition of government to-day, human nature being as it is, would necessitate the gradual reestablishment of government through a chaos and struggle which would be a repetition of Middle Ages history. Did we have the social state to-day, human nature being what it is, we should have under another form of organization an exaggeration of all the political corruption and selfishness and weakness which exist under present forms of government. In all civilized countries political changes will be an evolution and not a revolution. We may throw aside all supposed absolute rights and inflexible principles. Let the state do what it can do better than individuals.

Certainly we must recognize many causes of poverty. It is harmful to make a hobby of any one theory, or to try to find a panacea in any one remedy. Unwillingness may be subject to state regulation; lack of thrift, prodigality, etc., may be modified by philanthropic endeavor; inability can be removed in a percentage of cases by education and by the influence of such work as that of the 'settlements'; lack

of opportunity for work can be met in part in times of distress by state or municipal provision for needed public improvements; various kinds of misfortune should be met by state provision and organized philanthropy; hopeless pauperism should be the state's care; inequitable distribution will be gradually modified by labor organizations and the development of altruistic principles in society. There is much of poverty that no plan of state or society can remove until the tone of the whole social organism is improved. I refer to the lack of aims and motives in those who are otherwise physically and mentally capable. The world is full of opportunities for establishing in thousands of centers, productive industrial activities, if the unemployed had the power of initiative. This whole subject is related to the problem of degeneracy.

That monopolies, so far as harmful in fact and tendency, should be subject to control is, I believe, the growing theory. The findings of the United States Industrial Commission, which has recently finished its labors, are significant, especially as the commission can not be charged *a priori* with undue hostility to wealth. These findings show the need of control through government, and the belief in its possibility and feasibility. Moreover, the very fact of the report shows that specialists, statesmen, and even politicians and monopolists are awake to the fact that reform must come.

In spite of certain biological doctrines of social evolution, in spite of the advocates of struggle, in spite of all *laissez faire* theories, one important fact must be recognized, namely, that human sympathy is growing and that human sympathy must be preserved in all its strength and purity; it is the bond that unites the units into a social aggregate. At the same time it is conceded by all scientific philanthropists

that, as struggle is modified by altruism, the unfit of every description are preserved to the detriment of the race as a whole, and that some humane solution of the difficulty must be sought. The burden of the state is becoming such that the causes of degeneracy must be in large part removed. The very fact that state and society are assuming the care of the unfortunate shows the growth of altruism and a recognition of the solidarity of society. The dependent, defective and delinquent classes are beginning to receive attention and study commensurate with the importance of their effect upon the welfare of the whole social fabric. Since all degeneracy is due to heredity or environment, state and society can reach and to some extent regulate the causes.

Since the struggle in human society is bound to be lessened, and race degeneration will surely follow unless degenerate tendencies are eliminated, what is the aspect of the problem? Society will no longer allow the unfortunate to perish. The answer seems to me plain and simple. Dickens in his marvelous study of social problems emphasized with terrible vividness the evils of society from neglected children when these should become grown and trained in vice, and hence powerful for harm. The work of improving the lower strata of society must begin with children. Educate the normal children of the poor, teach them some trade and start them right in life. Educate all who under right influence and training can become useful citizens. Remove waifs from unwholesome surroundings, or, rather, improve the surroundings. But in the name of humanity place all those who by nature must become hopeless paupers, imbeciles, all who by nature will become hopeless criminals, under permanent custodial care. Teach them some simple occupation and make them in

part self-supporting. Segregate the sexes, that such unfortunates and society may be spared the fatal gift of degenerate offspring. This will do more to regenerate society than use-inheritance and all remedies proposed, except the great moral evolution of the race as a whole which I believe is going on.

Growth of Great Cities: ELMER L. CORTHELL, New York city.

At the annual meeting of the association held at Springfield, Mass., in 1895, the author offered a paper with a similar title.

The present paper gives the necessary summary of the former, and extends the curves of the diagram of growth and the data generally to include the census of 1900.

The growth of the eight cities under consideration is shown by a curve, the basis of which is the following: the periods from the earliest obtainable data to 1900 are measured from the ordinate, and the population of each census is measured from the abscissa.

It has been the aim of the author to show in the case of each city its *metropolitan* population; not simply that included within its political limits, but, in the case of London and Berlin, Greater London and Greater Berlin are also given.

The author gives a *table* of populations in addition to the curves of the diagram, to show the data for his latest extension of the curve of growth.

City.	Date.	Population.	Rate of Increase.
London.....	1900	4,589,129	8.6%
Greater London.....	1900	6,652,145	20.0
Paris (Greater).....	1901	3,599,991	18.0
St. Petersburg.....	1897	1,132,677	15.5
Berlin.....	1900	1,884,157	12.0
Greater Berlin.....	1900	2,512,523	19.0
Vienna.....	1899	1,639,811	11.0
Philadelphia.....	1900	1,369,632	23.0
New York (Greater) ..	1900	3,833,999	37.0
New York (Manhattan Borough).....	1900	1,850,093	29.0
Chicago.....	1900	1,838,735	54.0

The populations for the extreme or latest points on the curve are given above:

Likewise there is given with the above table the present rate of increase in population per decade; there is also stated the special features of each city—its area, density, etc.

As to density of population, this is shown graphically by squares on the diagram.

The comparisons in figures are as follows:

New York.—Maximum density, 630,740 per square mile on 3.6 acres. Average maximum density, 480,000 per square mile

Philadelphia.—Average density, 8,091 per square mile, area 129 square miles.

Chicago.—Average density, 8,430 per square mile, area 186 square miles.

The data for density were obtained about 1894.

A prediction is made of the population of each city in 1910 and 1920, taking into consideration important factors which are likely to change the present rates of increase, such as, first, the changes which new methods of transportation may bring about, either taking people more quickly and cheaply into cities, or out of them into more distant districts now open areas or sparsely

City.	The Author's Estimated Population for 1900.	Actual Population, 1900.	Estimated Population in 1910.	Estimated Population in 1920.
Greater London.....	6,496,000	6,652,145	7,490,400	8,516,256
London.....	4,599,800	4,589,129	4,967,784	5,315,528
New York (Greater).....	3,900,000	3,833,999	4,953,000	6,191,250
Paris.....	2,697,300	2,660,559	2,967,030	3,234,063
Greater Paris.....		3,599,991	4,139,990	4,759,589
Berlin.....	2,101,400	1,884,157	2,731,820	3,496,729
Greater Berlin.....		2,512,523	2,914,517	3,322,549
*Greater Chicago.....	2,400,000	1,838,735	2,574,229	3,475,209
Philadelphia.....	1,414,500	1,369,632	1,697,400	2,002,932
St. Petersburg.....	1,185,600	1,132,677	1,339,728	1,500,495
		1897		

on 320 acres. Average density, New York city proper, 40,000 per square mile on 37 square miles.

London.—Maximum density, 132,000 per square mile on 357 acres. Average density (registration London), 37,000 per square mile on 117 square miles.

Paris.—Average density, 79,300 per square mile on 31 square miles.

St. Petersburg.—Maximum density, 227,276 per square mile. Average density, 28,260 per square mile on 35 square miles.

Berlin.—Maximum density, 92,600 per square mile. Average density, 67,612 per square mile, area 23.4 square miles.

* Chicago. The erroneous estimates of population in 1894 require revision of prediction.

settled country. Second, the congesting or overcrowding of city areas, making them too dense for comfort or health. These two conditions are already producing changes of magnitude in population. London is an instance of these effects, or of some others possibly; several of the central districts, instead of showing an increase, showed actual decrease in the last two census epochs.

It is difficult to predict now what change will take place in New York during the succeeding decades by the contemplated transportation changes; such as the opening of the new bridge over the East River, probable completion of the old Hudson River tunnel, the construction of the Rapid

Transit Subway lines, the electrifying of the Manhattan Elevated and the extension of electric lines into the suburbs, and particularly by the construction of the Pennsylvania Railway's proposed tunnel under the rivers and New York, connecting New Jersey and Long Island with the central district of New York city, and additional facilities for handling passengers at the Great Central Depot and transferring them to the Subway.

It is not safe in such predictions to use *estimates* of population—nothing but the actual count by a census should be used.

In 1895 the author was led astray by estimates of Chicago's population, and these erroneous estimates vitiated his predictions of population in 1900, 1910 and 1920. In cases where he based them upon reliable official returns his predictions were not far wrong for 1900.

As this feature of the paper is one of special interest, the table of predictions and its comparison with the actual populations of 1900 is given in full in this synopsis.

The author's object in obtaining the data and in writing the two papers for the association—one in 1895, and the other in 1902—is to furnish information that may be of use in solving some of the important transportation, economical and social problems relating to the great masses of humanity assembled in those great cities of over one million inhabitants.

In compiling a paper on the subject in 1910, it will be necessary to add several cities to the list in Great Britain, the United States and Argentina. Buenos Aires is likely to have a population of a million by the year 1906.

The Pan-American Union and the Bureau of the American Republics: Hon. W. W. ROCKHILL, director of the Bureau of American Republics.

The International Union of the American Republics, popularly known as the Pan-American Union, has existed since 1890. It was established by the International Conference of 1889–90, with the Bureau of the American Republics as its organ. The reason for its creation was the fostering of the friendly relations between all the republics, the dissemination of more general knowledge of the social and economic conditions obtaining in the various portions of the Western Hemisphere and for improving business intercourse and trade relations. In 1893 the publication of a monthly bulletin was inaugurated. It is a magazine published in the English, Spanish, Portuguese and French languages, containing information regarding the industries, trade, manufacture and general resources of the several republics. Its edition is 11,000 copies. The demand for these has been great, especially from the public schools of the country. An important work of the bureau is the publication of maps of the several republics on a uniform scale, giving general geographical as well as economic features, railway and telegraph lines, etc. A code of commercial nomenclature containing more than 50,000 terms in English, Spanish and Portuguese has been published by the bureau. The first international conference provided that the union should continue in force for ten years, and indicated the manner of its further continuance. It is now in the second decade of its existence. It was early recognized that the lack of an agency to carry on the work initiated by the first international conference was one of the chief reasons why it did not accomplish as much as its projectors anticipated. It was, therefore, determined by the second conference, held in Mexico in 1901–2, to reorganize the bureau, or rather to broaden and expand its existing organization. The

name was changed to the International Bureau of the American Republics, and its affairs placed under the supervision of a governing board composed of the Secretary of State of the United States, who is chairman, and the diplomatic representatives in Washington of all the other American republics represented in the bureau—in other words, of all the American republics—numbering twenty. The bureau is supported by contributions from all the republics in proportion to the number of inhabitants. Under the new plan the bureau corresponds, through the diplomatic representatives, with the executive departments of the several governments. It furnishes information to any of the republics requesting it. Each of the republics sends to it two copies of each of its official publications, and supplies such information as may, from time to time, be requested by the director. All of the publications of the bureau are public documents and as such carried free in the mails of all the republics. The bureau is the custodian of the archives of the international American conferences, and is charged with the performance of any executive work specially imposed upon it by the conferences. Among the duties was the fixing of the date of meeting of the commission for the study of the coffee crisis, and the sanitary and customs congresses.

The necessity of forming a good library, especially of the official publications of the American states, was recognized by the conference which founded the bureau. It originated with the idea of creating a monument to the work of the conference. The second conference by resolution designated the library as the 'Columbus Memorial Library.' It has about 10,000 volumes, chiefly of works on Latin America. The scope of the work of the bureau does not yet seem to have been limited definitely,

and it is believed that in the future it may be found useful in many ways.

Work of the Bureau of Insular Affairs:

Col. CLARENCE R. EDWARDS, chief of the Bureau of Insular Affairs, War Department.

At the close of the Spanish War, the War Department was brought face to face with a unique problem, *i. e.*, the establishment of a properly qualified civil government under military control in the surrendered territory, a territory that speedily included Cuba, Porto Rico and the Philippine Archipelago. The functions of an organized government, in harmony with American methods, had to be set in operation in an unpromising field. In a day almost, the United States was called upon to govern more than twice as many people as inhabited the United States at the close of the Revolution.

The War Department found itself without adequate machinery to handle this new work. Its bureaus were adapted to military requirements, while the new conditions extended to all classes of government affairs.

The chief clerk of the War Department states that, for the sake of ready reference, the earliest Cuban customs cases, being foreign to even the miscellaneous class of records filed in the long-established record division, were filed on his own desk. On December 13, 1898, there was created in the office of the Secretary of War the 'Division of Customs and Insular Affairs,' which has recently grown into the Bureau of Insular Affairs.

There is no more important branch of the bureau than the legal questions that have arisen. These questions develop a broad field for investigation, including the law of military occupation; the laws and usages of civilized warfare; international

law; interpretation of the constitution of the United States; interpretation of treaties respecting the territories subject to military occupation, etc.

Some of these many questions could not be disposed of by adherence to rules already established by judicial decisions. It was, therefore, necessary to extend the investigation into the field of history and see if the same or similar questions had arisen in the several instances of previous acquisition of foreign territory by the United States, and to learn how the question had been dealt with by the legislative and administrative branches of the government of the United States.

The Consular Service and Foreign Trade:

HON. FREDERIC EMORY, chief of the Bureau of Foreign Commerce, Department of State.

A paper on the above subject was contributed by Frederic Emory, chief of the Bureau of Foreign Commerce, Department of State. That bureau has charge of the publication of consular reports on commercial and industrial subjects, from all parts of the world, and in recent years has greatly improved the efficiency and promptitude of this service.

Mr. Emory begins by quoting a recent address of Sir Edmund Monson, the British Ambassador to France, to the effect that the expansion of modern commerce and the many international questions it has created have had a strongly modifying influence upon diplomatic profession, which, instead of political intrigue, as in olden times, devotes itself now almost exclusively to business considerations.

If this be true of diplomacy, says Mr. Emory, it is even more generally applicable to the consular service. Diplomats are stationed only at the capitals of nations, but consular officers are found at all the

important trade and industrial centers, and are thus brought into closer touch with the daily activities and currents of trade. For this reason they are usually in a better position to report the practical details so often wanted by a home industry or a mercantile house engaged in foreign trade. In the old days the consuls of European powers were usually selected with reference to their social qualities and general culture, and without much consideration of their possible usefulness to trade. In these days of sharp competition among the great producing nations, the business capacity and zeal of the consul in collecting information are found to be not only essential, but often a determining factor in the growth of commerce.

Mr. Emory's contention is that the United States consular service has been found to be superior to those of the other powers as a trade agency, for the very reason that the persons selected as consular officers being average Americans, as a rule, have had more of business aptitude than any other quality and have seldom been deterred by social considerations from giving their attention to 'trade.' Frequent complaint has been made of late in Great Britain that the English consular service has become very largely a caste or polite profession, instead of being what is now more urgently required—an active, wide-awake corps for the collection of commercial intelligence. It is precisely in this branch of work that the United States consular officers have shown themselves to be particularly alert and efficient. Mr. Emory argues from this state of facts that it would be unfortunate, in the reorganization of our consular service, to revert to the social or intellectual exclusiveness found by Europeans to be no longer justified by existing conditions, and that the logic of our experience incontestably proves the im-

portance of giving the greatest weight to the business capacity and general intelligence of the individual consul.

The Relation Between Exports and Imports: Hon. T. E. BURTON, U. S. House of Representatives.

In determining the wealth or prosperity of a country nothing is more generally noticed than the relation between exports and imports, the so-called 'balance of trade.' An excess of exports is regarded as indicating prosperity. Yet, independently considered, nothing could be more misleading. In order to ascertain the significance of this relation it is necessary to consider a number of circumstances, chief among which are the condition of the country in question, whether a debtor or creditor country, in which connection the income derived from loans and investments in other countries, as well as from shipping engaged in international carrying trade, must be taken into account; the stage of development; the quality of imports and the uses to which they are applied, particularly whether they be raw material to be utilized in manufacture, or other material to be employed in increasing the productive power of the country. In the final analysis, the comparative utility of that which is received and that which is disposed of must be determined, regardless of valuations.

Countries receiving tribute or contributions from other lands, like Rome in the days of its supremacy, or Germany after payment of the French indemnity, show a large excess of imports.

In the United Kingdom the great excess in the value of imports is approximately equaled year by year by the income from investments abroad, and the carrying trade. In new countries rich in resources, exports naturally exceed imports, but when a developing stage begins much material is

imported from more advanced countries. Imports increase until the improved equipment for production acquired by large importations makes itself felt in excess of exports again.

After due allowance has been made for all these modifying circumstances and exceptions, the fact remains that a country importing largely in excess of its exports, when such excess is not derived from the income of a surplus accumulated in the past, or is not devoted to development for the future, gives sign of economic decay.

The annual excess of imports in countries furnishing commercial statistics is more than one billion of dollars. This excess, though made up partly of carrying charges and profits of trade, where these items are counted in the valuation of imports, can only be explained by the superior utility of commodities in the countries into which they are imported, a fact which necessarily influences valuations.

The phenomenal excess of exports of the United States during recent years can only be explained by realizing that we have gained a new position as the purveyor of the world's wants. It is impossible that this great disparity of exports can continue. There is an inevitable tendency, whenever a nation obtains great accretions of wealth, to increase purchases abroad. In the last two years the excess has been diminishing, but other favorable indications appear in the relation between exports and imports, such as the increased proportion of raw material imported for manufacturing. In our foreign trade, as well as in all other ways, all signs point to the assured supremacy of the United States.

Tropical Development a Necessity of World Progress: Hon. O. P. AUSTIN, chief of the Bureau of Statistics, Treasury Department.

The principal suggestions of Mr. Austin's paper were:

1. That the increasing population of the world and the increasing facilities for transportation require that its various sections shall contribute their proper proportion to the requirements of man.

2. That the world, and especially the temperate zones, is constantly increasing its demands for tropical and subtropical products.

3. That although the belt lying between the thirtieth parallels of north and south latitude contains practically half the land area of the world, it contributes but one sixth of the exports which enter into the international commerce of the world.

4. That conditions in the temperate zones are such as to render available surplus capital, energy and experience which may now be devoted to the development of the tropics.

5. That recent discoveries for the protection of life and health in the tropics, and the use of natural power, will now enable the temperate-zone man to accomplish many things in the tropics not possible in earlier years.

6. That those sections of the tropics in which the native labor supply is insufficient may be readily supplied with the necessary amount of tropical labor from India, southern China and other sections of the Orient whose populations have shown themselves capable of and willing to labor in the tropics.

7. That the development of comparatively recent years has brought practically all of the tropics, except tropical America, under control of temperate-zone countries, thus facilitating the application in the tropics of the capital and energy of the temperate-zone man.

Economic Operations of the Treasury Department: Hon. MILTON E. AILES, Assistant Secretary of the Treasury.

The economic operations of the department relate chiefly to the management of the revenues. In the public mind this part of the treasury work is what makes or un-makes a secretary of the treasury. The world little knows or cares how heavily burdened that officer may be with the management of the customs (unless he examines baggage over-zealously) or how a secretary of the treasury lies awake at night devising ways and means for stamping out the latest yellow fever epidemic, or is harassed with the intricacies of constructing innumerable public buildings or caring for more than three hundred already in existence. When storms ravage the coast it is the Secretary of the Treasury who prays that not one of the keepers of his 1,200 lights and lighthouses may have failed, or that any of the surfmen of the life-saving service have been found wanting in courage at the supreme hour. It is the Secretary of the Treasury who must know that navigators' charts from the Coast and Geodetic Survey are correct, that the Steamboat Inspection Service has done its work faithfully, and, in fact, that all of the 26,000 employees accredited to his department and engaged in its many and varied services are faithful to their trusts. And yet, he must keep his fingers on the pulse of government receipts and disbursements. He must observe an approaching deficiency and give timely warning to congress, or arrange for public loans, in order that the treasury may be replenished and strengthened. In the days of prosperity he must also observe the phenomena of a surplus. Accumulating funds in the treasury mean withdrawals of money hitherto profitably employed in trade or business, and so he must set about to apply a remedy.

Under our system government revenues increase when business is most active throughout the country. The result, unless carefully guarded against, is a lock-up of money in the treasury just when it is most needed elsewhere. When the crop-moving time comes in the fall, and the great money centers are sending currency to interior points, the treasury is bombarded with requests for relief. As the rates for money advance, the cry becomes louder. For more than half a century now, it has been the established policy of the government to heed that cry, especially when it is apparent that the treasury itself is a disturbing factor. Recent experiences demonstrate what must and should be done so long as our system permits the hoarding of funds in government vaults, and so long as that situation is complicated by an unsatisfactory bank-note circulation not related to the expanding and contracting wants of commerce. Within the past few months the Secretary of the Treasury by extraordinary efforts succeeded in stimulating national banks to take out some \$25,000,000 additional circulation. He also increased the amount of public funds which national banks are permitted to hold by \$24,000,000. He anticipated the payment of interest on the public debt for October and November without rebate, and for the whole of the fiscal year, to such as cared to avail themselves of the offer, subject to a rebate of two tenths of one per cent. a month, by means of which latter method he succeeded in paying out \$3,000,000 more, with a profit of over \$40,000 to the treasury; and finally, when the business of the country demanded still further relief, he anticipated a portion of the public debt itself by buying bonds and thus releasing some \$23,000,000. By the time the crop-moving season was over the amount of cash actually locked up in the treasury had been reduced

by nearly \$50,000,000, and there was left in the treasury vaults only a little over \$50,000,000, which tradition and practice have established as a fair working balance. The responsibility for managing the public funds is a heavy one, but it has been met at all times, and under all administrations, by every Secretary of the Treasury, with high courage and devoted effort to keep the treasury as near as may be out of the business world, to avoid the well-recognized evils that exist, and to take advantage of all the good there is in our present national financial system.

Effects of the Inflow of Gold: Hon. ELLIS H. ROBERTS, Treasurer of the United States.

The stock of gold in the United States shows for four years an annual average gain of \$107,783,639. All the countries of Europe show such a gain less by \$12,358,639. In per capita the stock of gold in this country is greater than anywhere else, except in France and South Africa. The treasury of the United States holds \$615,000,000 and gained \$412,450,562 in five years, while all the official banks of Europe taken together in the same period lost \$37,477,102.

Upon such treasures our currency rests solid and impregnable. An attack on our reserves may be conceived, but it would be to besiege Gibraltar with carbines. The inflow of gold has, since July 1, 1897, added an average of \$78,238,512 every year to our circulation. Here lies possible peril. Inflation of currency incites to dangerous expansion of business. No one will suggest that the incoming of gold shall be stopped; but can not paper currency be reduced in dull seasons?

Prices of commodities have advanced, and wages have followed a little after. How do these conditions affect our world

relations? With our stock of gold, our official holdings, and our gold in circulation exceeding those of any other country, and growing more rapidly in gross and per capita than those of any other people, this land becomes more and more the home of gold. The solidity of our financial system adds much to the strength of the United States in commercial credit, general esteem and international politics in all the world. We fear no evil from exports of gold, for we can spare more than Europe can pay for.

Has inflation of currency, of prices and wages gone so far as to check our exports? In agriculture crops at home and abroad determine shipments. Prices and quality control exports of manufactures. In the first ten months of 1902 we sold abroad more manufactured articles than in any like period except 1900, and they were 32.63 per cent. of our total exports, the largest on record. The inflow of gold is not without its hazards. They must be avoided. The American people are sane enough to make gold not only the symbol of prosperity, but its stout defense.

Monetary Reform: Hon. GEORGE E. ROBERTS, director of the Mint.

Mr. Roberts's paper was chiefly devoted to bank-note issues upon ordinary commercial assets. He said in part:

The objector to note issues without special security wants first of all to divest himself of the idea that note redemption depends solely or primarily upon the gold reserve in the banks. That is a reserve and guarantee fund, but the regular redemption of a scientific bank-note currency is through a clearing house by a system of offsets. Under the Fowler Bill, now pending in Congress, each bank would send the notes of other banks that came to its counter to its correspondent in the clearing-house city of its district. It would have

a double object in doing this: (1) It would prefer to pay out its own notes instead of theirs, and (2) it would do it to have an offset to its own notes in the clearing house and to build up its gold reserve there. The whole plan is simply a further development of the clearing-house idea as we have it in operation for drafts and checks. It is a further economy in the exchanges, a further substitution of an inexpensive medium.

So long as a bank confined its note issue to the service of its regular daily, legitimate trade, to giving the ordinary accommodation to farmers, manufacturers and merchants in their business, there would be no important balances against it at the clearing house, because the legitimate trade of the country offsets itself. But as soon as a bank began greedily to push its circulation by unusual methods or unusual credits, adverse balances at the clearing house would begin to appear and its gold reserve to dwindle. So long as a bank did only the business that a bank ought to do, redemption would be no problem at all, but the moment it departed from that policy, it would have to suffer and settle at every misstep.

It is a familiar fact that the fall of every year brings tight money in the United States, due to the moving of crops and the activity of trade. There is need of more currency, more instruments of exchange, in that part of the year than at any other time, and our monetary system does not respond to such special demands. When money is easy it accumulates in the centers, fosters speculation and becomes more or less engaged there, and then when the fall demand comes on, there is a wail over its withdrawal because it forces liquidation and unsettles business. These credit notes of local banks would not be likely to have general circulation, for the reason that the

banks of each locality would keep their neighborhood clear of foreign currency. They would not accumulate in the centers because they would not be good in the reserves of the city banks. They are not available as a basis of credit. They can be used only as a circulating medium. This distinction between the bank note and our other forms of paper money is the feature to which attention is directed. It follows from this and from the experience of similar systems that the local banks all over the country would have in ordinary times a reserve of circulation to put out whenever business was active enough to absorb it. The volume of circulation would naturally expand in the fall of the year and contract as business slackened.

Inflation through the Expansion of Bank Deposits: Professor JOSEPH FRENCH JOHNSON, New York University.

Professor Johnson pointed out that bank deposits are of two classes. (1) Those which result from a deposit of cash or of checks and drafts with a bank. These he styled cash deposits. (2) Deposits which are the result of a credit operation, the borrower taking, not money, but a deposit account. These he called credit deposits. The cash deposits can not be increased at will by the banker. They represent the savings of a community, wealth that has been produced and is not wanted by the producer. The credit deposits may be increased at the discretion of the banker. They represent savings in the process of being made, wealth being produced. Both classes of deposits give rise to a large mass of checks and drafts which constitute a medium of exchange known as deposit currency. Inasmuch as bankers have some discretion in the expansion of their credit deposits, the supply of deposit currency in

a country is always dependent upon the policy pursued by the banks. Through an unwise expansion of their credit deposits banks are able to bring about a very dangerous increase or inflation of the deposit currency. In good times, when a speculative spirit easily gets possession of business men, bankers are always liable to encourage speculation, and the consequent rise of prices, by the expansion of their credit deposits, and a larger portion of the country's monetary stock, is drawn into the banking reserves as a basis for the extended credits. The increase of the banking reserve, it should be noted, is very slight in comparison with the concurrent increase of the deposit currency. Inflation of the medium of exchange in this way is more dangerous and can be carried to greater length than any inflation possible through a free issue of bank notes. In the case of bank notes an automatic check operates to prevent an over-issue. A definite amount of hand-to-hand money is wanted by the community, and if any excess is put into circulation, it speedily finds its way back to the issuing bank. No such instant automatic check is applied in the case of inflation through an increase of deposit currency. A brake is always applied, but not promptly. An undue inflation of deposit currency inflates prices quite as effectively as an increase in the stock of money itself, and so finally disturbs our foreign trade relations, bringing about a balance of indebtedness that renders the export of gold necessary. This export of gold forces bankers to contract their operations and often brings injury upon men whose business enterprises are in every respect deserving of assistance.

FRANK H. HITCHCOCK,

Secretary.

(To be concluded.)